

REMARKS/ARGUMENTS

Claims 1, 2, 4-7, 11, 12, and 14-17 are pending. Claims 3, 8-10, and 13 have been canceled without prejudice. Claims 1, 2, 11, and 15 have been amended. No new matter has been introduced. Applicants believe the claims comply with 35 U.S.C. § 112.

Claims 1, 2, 4, 5, 7, 11, 12, and 14-17 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Suzuki et al. (US 6,798,598).

Applicants respectfully submit that independent claim 1 is novel and patentable over Suzuki et al. because, for instance, Suzuki et al. does not teach or suggest decreasing the write current during the present write operation in multiple steps the number of which depends on the number of recording operation interruptions and is greater than two steps, wherein the write current is less than the given write current at the end of the write operation. As described in the specification at page 9, paragraph [0044], the write current may be increased/decreased in multiple steps depending on the number of write operation interruptions (multiple-step write current control).

In Suzuki et al., the nominal current (W_{nom}) is decided by 5 bits and set current value of 32 levels from "00000" (0mA) to "11111" (60mA), and boost current (W_{boost}) is decided by 3 bits and set current value of 8 levels from "000" (0mA) to "111" (20mA) (col. 4, line 47 to col. 5, line 10). This refers to the variety of the combination of W_{nom} and W_{boost} ($W1 = W_{nom} + W_{boost}$). It has nothing to do with multiple-step write current control. Significantly, the W_{nom} value is decided as just one proper value selected from 32 levels, and the W_{boost} value is decided as just one proper value selected from 8 levels (see Fig. 4(a)). In control processing in the magnetic disk drive, Suzuki et al. uses only two selected values of $W1 (=W_{nom})$ and $W2 (=W_{nom} + W_{boost})$ shown in Fig. 4(b), and involves just two steps.

In contrast, the invention as recited in claim 1 is directed to multiple-step write current control in which the given write current is decreased step by step according to the number of recording operation interruptions which is higher than two steps. This allows the write current to be adjusted more precisely, and the magnetic disk drive having a plurality of magnetic heads to absorb the thermal expansion time differences among each of individual magnetic head more effectively.

For at least the foregoing reasons, independent claim 1 is novel and patentable over Suzuki et al.

Applicants respectfully assert that independent claim 2 is novel and patentable over Suzuki et al. because, for instance, Suzuki et al. does not disclose or suggest applying a second write current during a second later portion of the present write operation, wherein the first write current is higher than the second write current, the write current being decreased from the first write current to the second write current in multiple steps the number of which depends on the number of recording operation interruptions and is greater than two steps.

As discussed above, Suzuki et al. uses only two selected values of W1 and W2 shown in Fig. 4(b), and involves just two steps. In contrast, the invention as recited in claim 2 is directed to multiple-step write current control in which the given write current is decreased step by step according to the number of recording operation interruptions which is higher than two steps.

For at least the foregoing reasons, independent claim 2 and claims 4, 5, and 7 depending therefrom are novel and patentable over Suzuki et al.

Applicants respectfully contend that independent claim 11 is novel and patentable over Suzuki et al. because, for instance, Suzuki et al. fails to teach or suggest a write current control circuit that causes the write current to decrease in multiple steps, the number of which depends on the number of recording operation interruptions and is greater than two steps, during a write operation so that for an initial portion of the write operation, the write current being higher than the write current for an ending portion of the write operation.

As discussed above, Suzuki et al. uses only two selected values of W1 and W2 shown in Fig. 4(b), and involves just two steps. In contrast, the invention as recited in claim 11 is directed to multiple-step write current control in which the given write current is decreased step by step according to the number of recording operation interruptions which is higher than two steps.

For at least the foregoing reasons, independent claim 11 and claims 12 and 14 depending therefrom are novel and patentable over Suzuki et al.

Applicants respectfully submit that independent claim 15 is novel and patentable over Suzuki et al. because, for instance, Suzuki et al. does not disclose or suggest means for setting the value of write current to be supplied to the coil for each of the specified segments and recording information while varying the write current in multiple steps, the number of which depends on the number of recording operation interruptions and is greater than two steps, during a writing sequence.

As discussed above, Suzuki et al. uses only two selected values of W1 and W2 shown in Fig. 4(b), and involves just two steps. In contrast, the invention as recited in claim 15 is directed to multiple-step write current control in which the given write current is varied step by step according to the number of recording operation interruptions which is higher than two steps.

For at least the foregoing reasons, independent claim 15 and claims 16 and 17 depending therefrom are novel and patentable over Suzuki et al.

Claim 6 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Suzuki et al. in view of Gaertner et al. (US 6,445,531). The Examiner cites Gaertner et al. for allegedly disclosing that the predetermined period of time after the start of writing is between several tens of microseconds and a millisecond. Gaertner et al., however, does not cure the deficiencies of claim 2 from which claim 6 depends, in that it also fails to disclose or suggest decreasing the write current during the present write operation in multiple steps the number of which depends on the number of recording operation interruptions and is greater than two steps, wherein the write current is less than the given write current at the end of the write operation. Therefore, claim 6 is patentable over Suzuki et al. and Gaertner et al.

Appl. No. 10/671,806
Amdt. dated March 16, 2005
Reply to Office Action of November 17, 2004

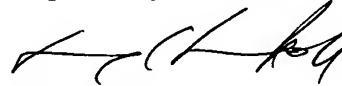
PATENT

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,



Chun-Pok Leung
Reg. No. 41,405

TOWNSEND and TOWNSEND and CREW LLP
Two Embarcadero Center, Eighth Floor
San Francisco, California 94111-3834
Tel: 650-326-2400
Fax: 415-576-0300
RL:rl
60441735 v1